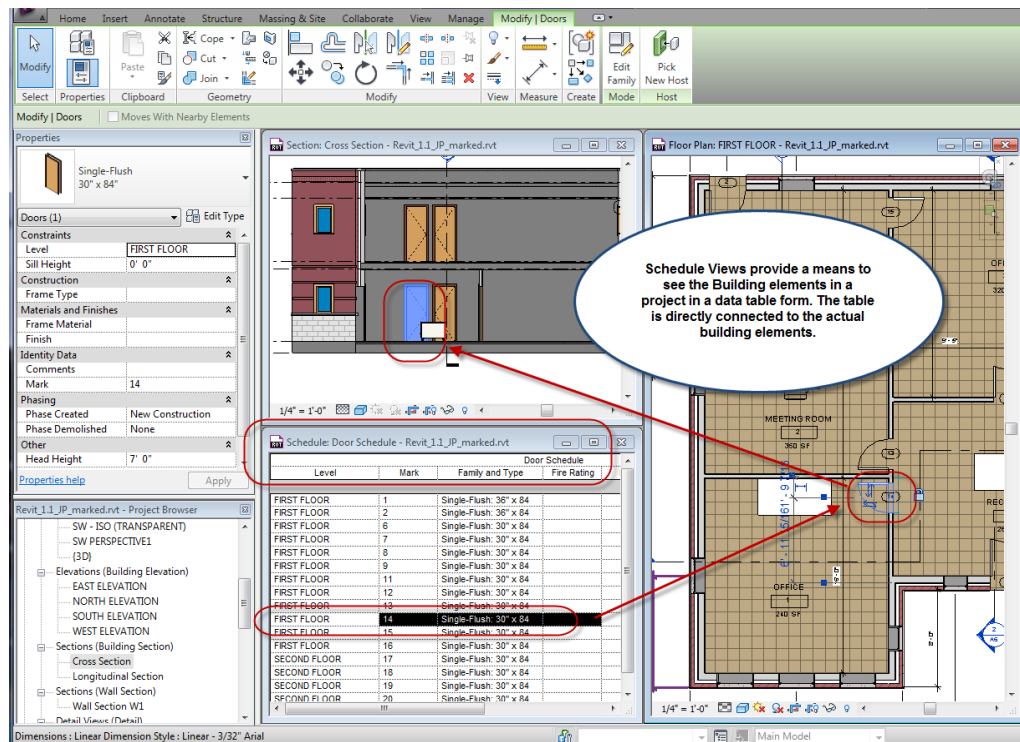


AGENDA:

1. Introduction to Schedule Views
2. Specifying Schedule Properties
3. Modifying Schedules and Adding Schedules to Sheets

1. Schedule Views

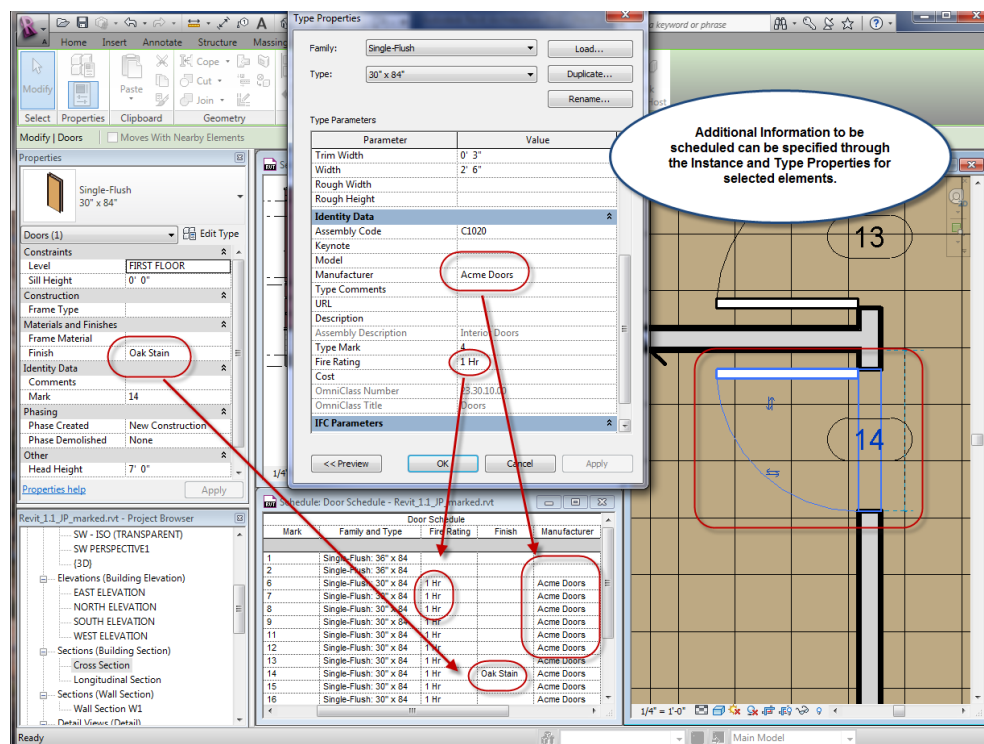
Revit allows you to create schedule views which provide another means to represent or look at elements in a project. Schedules are lists which show the quantities of elements and the properties of building elements which are being used in the Project.



Schedules allow you to itemize items such as doors, windows, rooms, floors, and walls. They can also be used to calculate total quantities, areas, and volumes. By linking cost data to the building elements, schedules also allow you to generate preliminary estimates. Schedules are automatically updated as the project develops. As you add or remove building elements the schedule views will always reflect the latest quantities and properties.

In a typical project, the creation of schedules and quantity take-offs can be a very labor intensive process. If the process is done manually, it can take a very long time and will invariably need to be checked and rechecked to remove errors and keep the tables up to date.

In Revit all building elements have information about their properties defined within the model. A wall for example has a length and a surface area which can be scheduled. A door has an associated Width parameter and an OmniClass Number built in to its family definition.



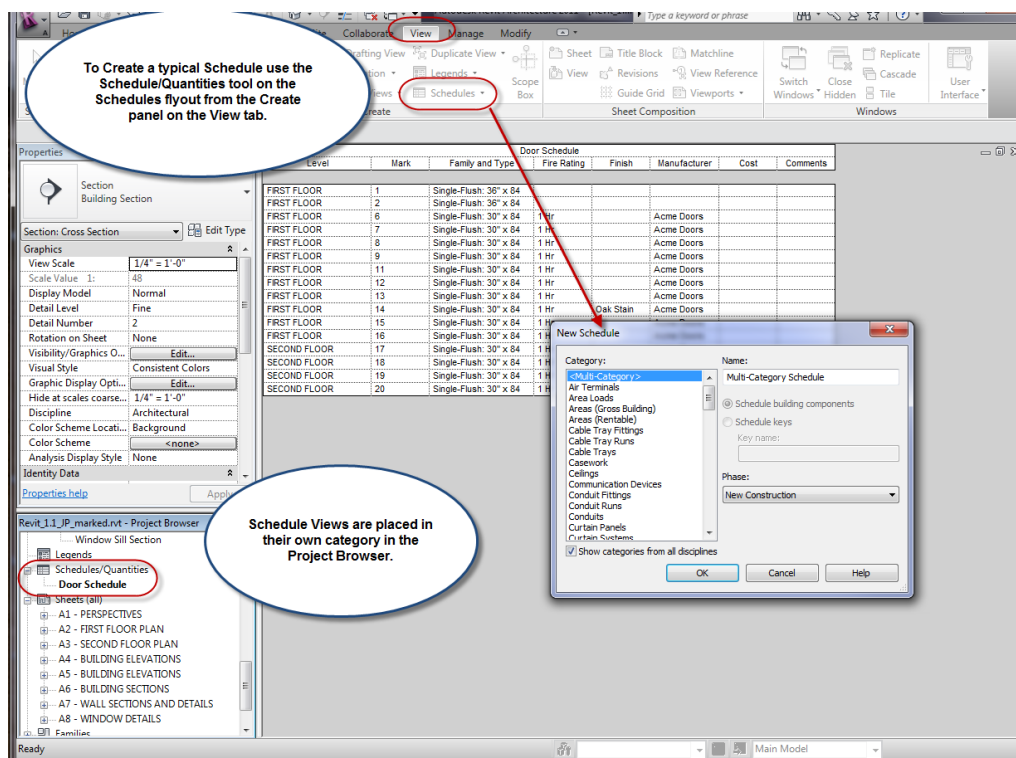
In addition to the physical data and preassigned family parameters which can be extracted and displayed from the building elements, you can also associate additional information with elements such as Cost, Fire Rating, and Marks. This information may be added by specifying Type or Instance Properties.

It is possible to edit the schedule parameters directly in the Schedule view as well as via the Instance and Type properties palettes. When you assign a value to a type parameter, by editing that field in the Schedule view, you will be prompted to confirm that the value will be assigned to all instances of that particular family type.

Although you may think of tables such as door and window schedules as annotation objects, Schedules are views and to create a new Schedule you need to start the process on the View tab of the Ribbon.

In the Schedules flyout, there are five options which allow you to create Sheet lists, View lists, Material Takeoffs, and Note Block Lists in addition to the most common option the Schedule / Quantities option.

This is the type which is used for Door Schedules, Window Schedules, Room Finish Schedules and Wall Schedules. In the New Schedule dialog, pick the appropriate category, set the name for the Schedule, and pick OK.



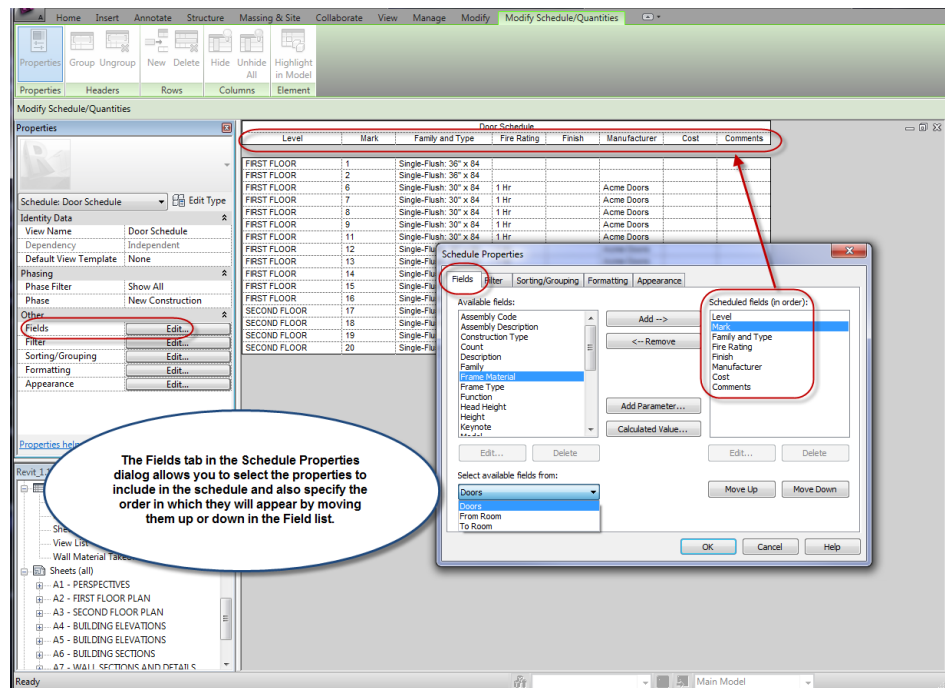
Sheet Lists and View Lists allow you to create tables of View names, sheet names, sheet numbers, etc. A Note Block schedule lists the notes and annotation symbols used in the project. The Material Takeoff schedule can list all of the materials inside an assembly and extract volumes and areas from individual components. For example, you might want to know the square footage of all drywall used in your project regardless of whether it was on an interior or exterior wall. A material takeoff schedule could be set to apply to all walls and then filtered to display only one component such as brick, concrete block, drywall, etc.

Schedule Properties

When you create a new schedule view, you will be prompted to first select a category to which the Schedule will be applied. There are a plethora of options allowing you to select and schedule virtually any type of building element from your project.

After you select the component category, the Schedule Properties dialog will appear. This dialog contains 5 tabs which provide tools to let you specify what will be scheduled, as well as filter tools, sorting and grouping tools, formatting tools, and appearance settings.

To Add fields to your Schedule select them from the list of available parameters on the left and then double click or pick Add to include them in the Scheduled Fields window on the Right. Double clicking a field in the window on the right will remove it from the list. Use the

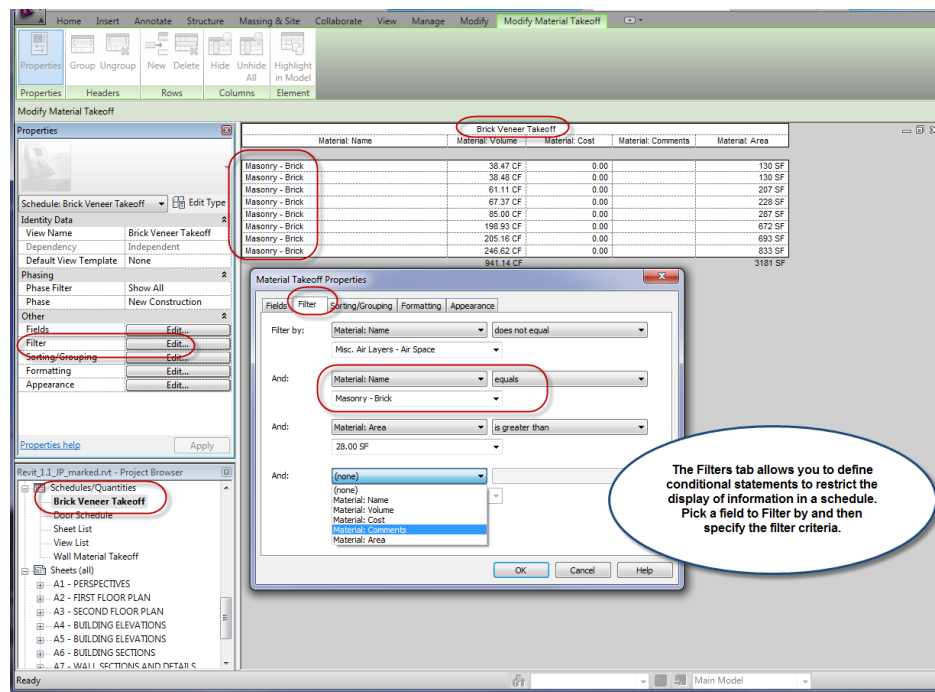


Move Up and Move Down buttons to set the order of the fields. The top field in the list will become the first header on the left side of the resulting schedule.

The Add Parameter button provides the same functionality available in the Family Editor to create Project or Shared parameters. The Calculate Value button lets you create formulas using existing fields in the schedule. For example, you could create a unit cost per linear foot or square foot of a certain element such as brick or concrete footings, and then multiply this value by the quantity of element to obtain a total cost which could be reported in its own column.

The Filter tab of the Schedule Properties dialog allows you to create filters to limit the display of data in a schedule. You can create up to 4 filters, all of which must be satisfied to display the data for a specific set of elements.

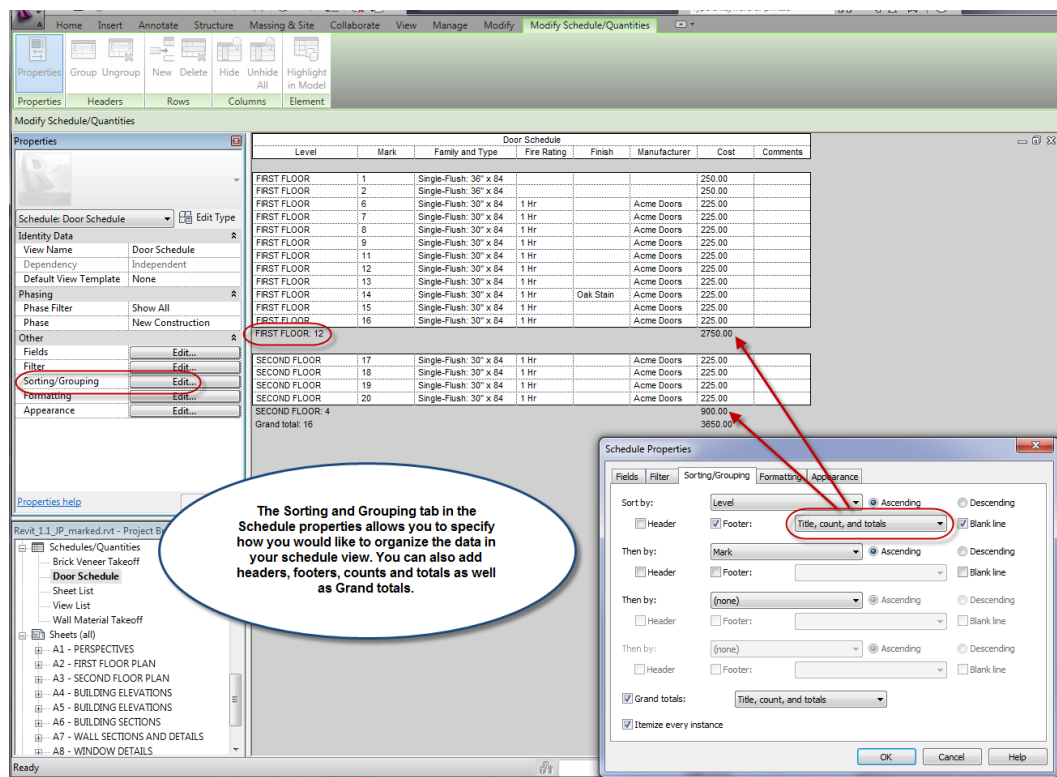
Many types of scheduled fields may be used for filtering purposes. Available types include Text, Number, Integer, length, area, volume, yes/no, level, and key schedule parameters. It is not possible to filter based on Family, Type, Area Type, or by Material parameters.



Filters are created based on existing fields that have been added to the Schedule. After you select an available field, you specify an operator. The Available operators include variations of equals, does not equal, greater than, and less than for any field values which are numbers or integers. If the field to filter is a Text type of parameter, you can use additional operators such as Begins with, Ends with, or Contains. The final step is to specify a condition that works with the selected operator. For example you can choose to Filter the display of Doors to show only the Doors which have a Level parameter equal to the the Second Floor level.

It is possible to create filter based on fields which will not appear in the finished schedule by hiding that field in the Formatting tab.

On the Sorting and Grouping tab you can specify the order in which information is displayed and which elements control that order. For example you might choose to sort all of the doors in a door schedule first by which level they are hosted on. When you choose a Sort by option, you also specify if you want to organize the entries in Ascending or Descending order.

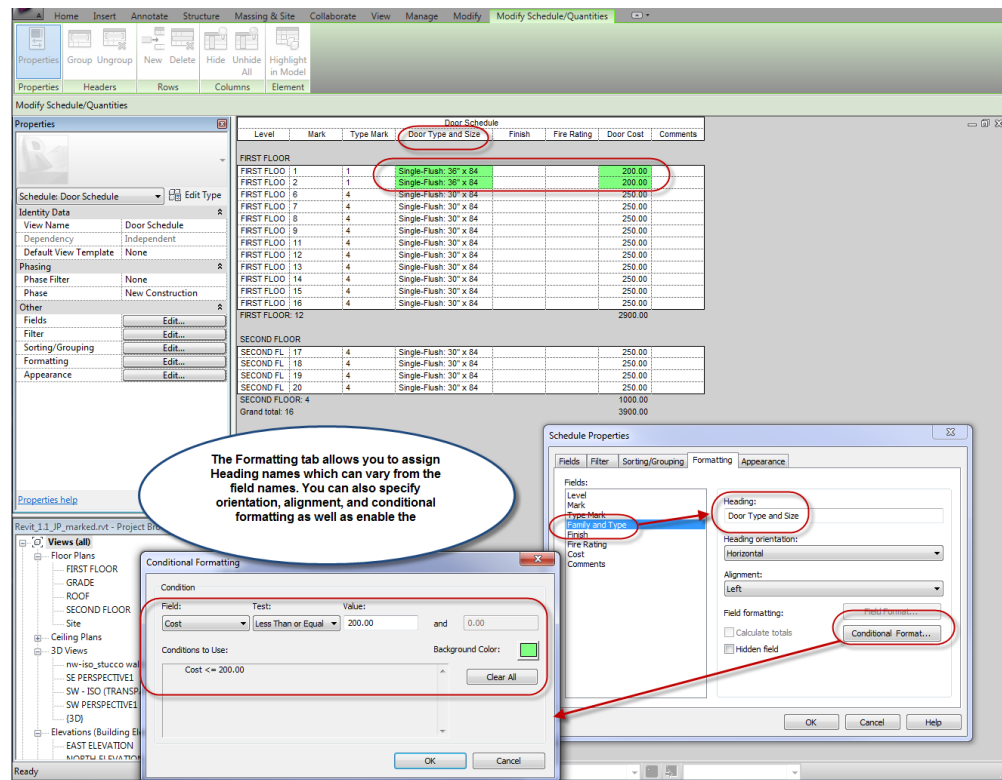


You can specify up to four levels of sorting and grouping criteria. Each sorting level can also include a header, a footer, and a blank line to separate the groups of data. When you enable the footer option for a group, you can also specify what information you would like to display on footer line. You can choose Title, Count, and totals, Title and Totals, Count and Totals, or Totals only.

You can choose to show every instance of an element type, or you can collapse multiple instances of the same type on to a single row. Use the Itemize every instance option at the bottom of the dialog to control this behaviour.

The Grand Totals option, when enabled, will allow you to display the sum of the elements from all of the groups. Grand totals also display the sum of any columns with subtotals.

The Formatting tab in the Schedule Properties provides several tools for controlling the appearance of the headings and data in your Schedule. It is possible to specify a displayed heading which will vary from the actual field name. For example, the Family and Type field can be set to display “Door Type and Size”.

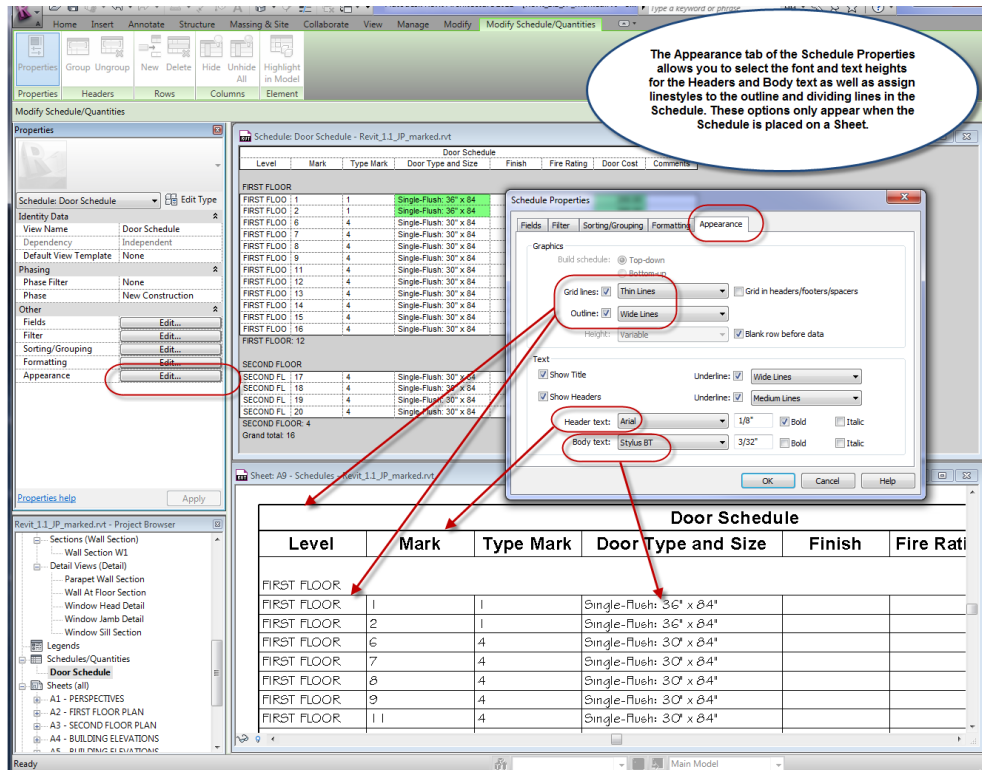


The Heading orientation option allows you to rotate the heading so it reads vertically instead of the default horizontal orientation. Note that this rotation will only appear when the schedule view is added to a sheet.

The Alignment of schedule data can be set to left, center, or right justified. The right justification setting is especially appropriate for fields such as cost as the totals will be correctly positioned with the decimals aligned as they would appear in a spreadsheet.

Conditional Formatting and Field Formatting allows you to override the default project units and to highlight values that meet certain conditions. For example a cost that exceeds a certain number or a room area that is less than a required minimum value can be flagged to display with a colored background in the schedule view.

The Final tab in the Schedule Properties dialog is the Appearance section which has a group of controls for Graphics and another for the Text. In the Graphics settings you can enable the display of grid lines between the rows of data and an outline which will surround the perimeter of the schedule. You can also choose to force the grid to display in the Headers and Footers sections. Any available linestyle can be assigned to the gridlines and the outline.



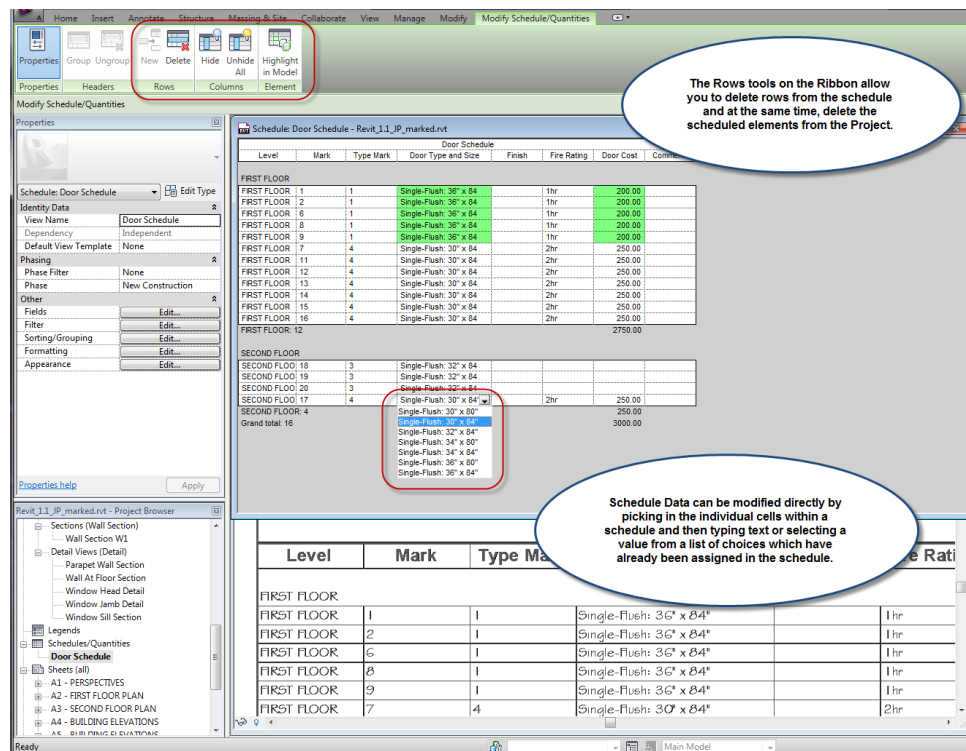
The Text section of the appearance tab lets you enable the display of the Title and Headers. When you enable either section more controls appear allowing you to underline the title or header and specify a linestyle for the underline.

Other text options allow you to specify a font and text height to vary the appearance between the titles/headers and the body text. Bold and Italic formats can also be applied to the text for either section. Headers and Titles are treated equally and the font settings you choose for the Header will also be applied to the Title text.

Appearance settings are only visible when the Schedule is placed on a Sheet.

Modifying Schedules and Adding Schedules to Sheets

All Schedules update automatically to reflect the latest changes in the Project. If you delete a door in the project, it is also removed from the Door schedule and all related totals will also be updated. If you move a wall, affecting the room size, the related floor area in a Room Schedule will automatically update to reflect the new size.



It is possible to edit scheduled items by editing the cells in a schedule. When you pick in a data cell in a schedule view you can either select a value from a list or enter text. As you add new values, they will become available in that field's list.

When you edit a value for a field based on a Type parameter, you will be prompted to confirm that you are assigning the value to all instances of that type.

If you pick a cell and then choose the Delete row tool on the Ribbon, you will be prompted to confirm that you will be deleting the scheduled element in the Project and not just removing a row from the schedule.

After you create a schedule you can modify its organizational structure by Grouping related headings under a new overall header. If you pick and drag your cursor over a series of adjacent headings, the Headers panel on the Ribbon will display a Group tool. You can also select a series of headers and then right-click your mouse to access the Group Headers option.

When you group a set of headers a new row is created above the selected headers. Pick in this row and enter text to set the Group heading. To Remove a Group heading, pick in the header cell and choose the Ungroup tool on the Headers panel.

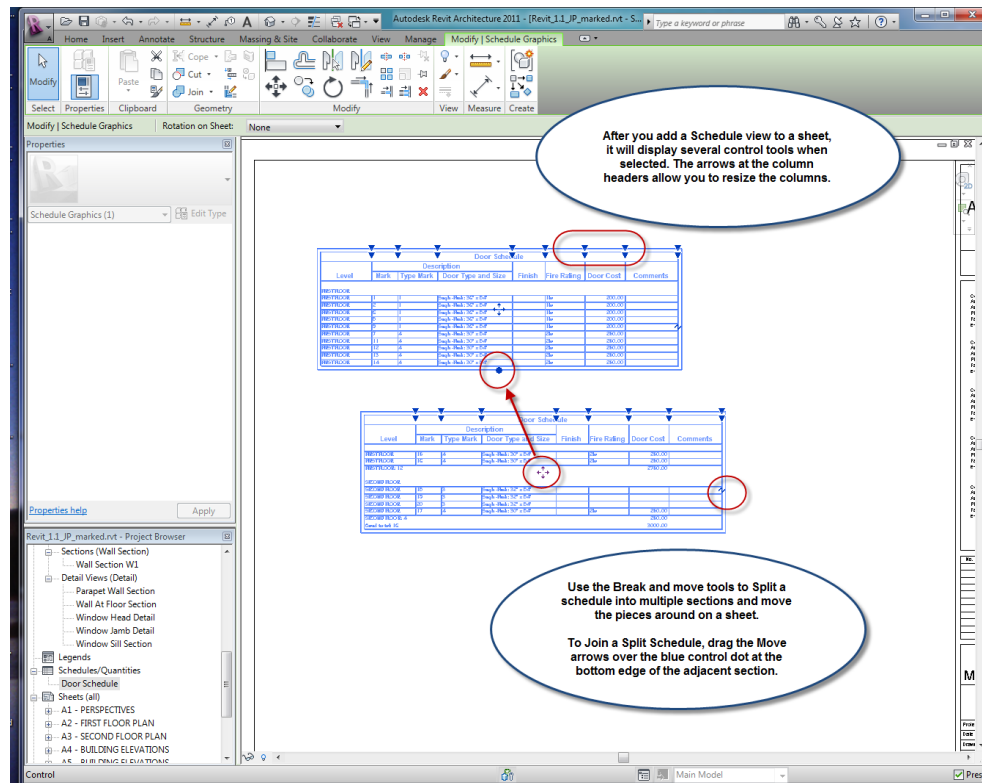
Group Headers
Creates a heading for selected column headers in the schedule.
To select the column headings, be sure the cursor appears as an arrowhead, not a text insertion cursor.
A new heading row displays above the grouped column headings. You can then enter text in the new heading row.

To create a new heading over a group of related headings, pick and drag through 2 or more headings and then choose the Group tool on the Headers panel of the Ribbon or right click and choose Group Headers. Pick in the new header row and type the new heading.

Level	Mark	Type Mark	Door Type and Size	Finish	Fire Rating
FIRST FLOOR					
FIRST FLOOR	1	I	Single-Flush: 36" x 84"		1 hr
FIRST FLOOR	2	I	Single-Flush: 36" x 84"		1 hr
FIRST FLOOR	6	I	Single-Flush: 36" x 84"		1 hr
FIRST FLOOR	8	I	Single-Flush: 36" x 84"		1 hr
FIRST FLOOR	9	I	Single-Flush: 36" x 84"		1 hr
SECOND FLOOR					
SECOND FLOOR	18	3	Single-Flush: 32" x 84"		
SECOND FLOOR	19	3	Single-Flush: 32" x 84"		
SECOND FLOOR	20	3	Single-Flush: 32" x 84"		
SECOND FLOOR	17	4	Single-Flush: 30" x 84"		
SECOND FLOOR: 4					
Grand total: 16					

If there is data which you want to Schedule and track but not display in the schedule when you place the view on a sheet, select the column header for that category and choose Hide from the Columns panel. To restore the display of hidden categories, use the Unhide All tool.

To Add a Schedule view to a sheet, open the sheet and then drag the Schedule view from the project Browser and pick a point on the Sheet. To continue to adjust the formatting and appearance settings of a schedule view after it has been added to a sheet, pick the view name in the Project Browser and then select the appropriate edit button in the Properties palette.



Columns may need to be resized after placing a schedule on a sheet. Pick a schedule and then pick and drag on the control arrows which appear at the top of the schedule to resize columns.

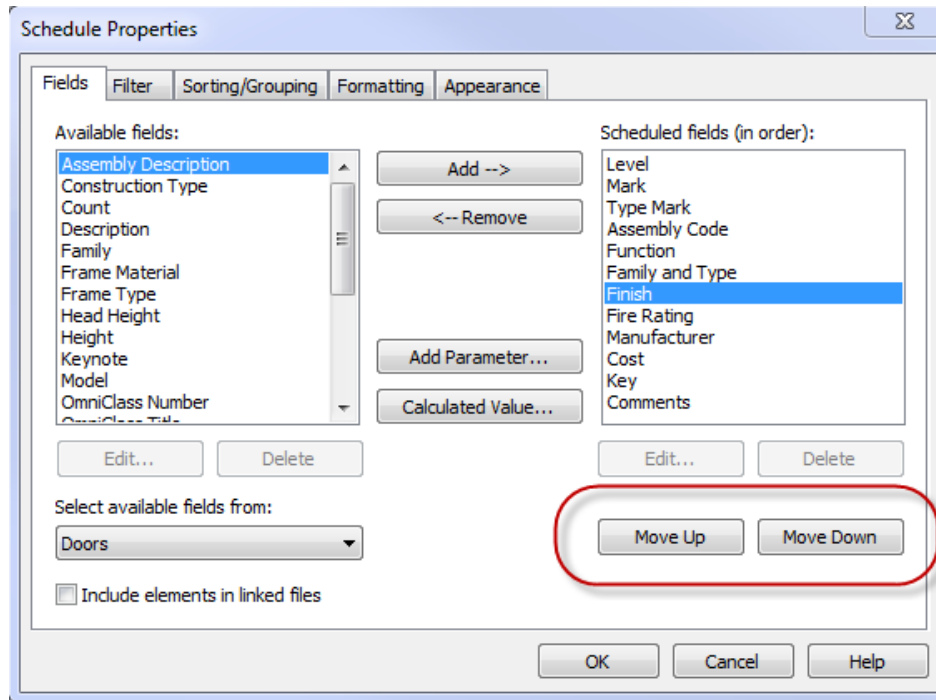
Selected schedules display a break symbol on the right side which will Split the schedule table into two parts. You can continue to split each resulting section into two more parts if required. To adjust the number of rows in a split section, pick and drag the blue control dot at the bottom of the split section.

To restore split sections into their original configuration, select the second half of the split section to display its move arrow. Pick on the Move icon and drag it over the blue control dot which appears at the bottom edge of the adjacent section. Release the mouse button when they are aligned and the schedule section will be restored.

Exercise Notes

- In the following practice exercise you will learn how to create and work with Schedule Views
1. Start Revit and open the Revit 1-1_XX project which you created as the first assignment in the Level one Revit Architecture course. Select one of the exterior doors and choose Edit Type. Duplicate the type and create a new type called 36" x 84" Entrance. Change the Function to Exterior, set the Manufacturer to Acme Doors, set the description to Insulated and set the Type Mark to D1. For the fire rating, enter 1.5 hr and set the Cost to 475.00.
 2. Note the Assembly description of "Interior Doors". To change this to Exterior Doors, you need to modify the Assembly Code. Pick in the C1020 field and choose the Browse button. In the Show Classifications for pulldown, choose All Categories. Expand the B-Shell category and then navigate to B2030 – Exterior Doors. Pick Ok to assign the new assembly code and then pick Apply and OK to finish creating the new door type. Select the remaining exterior doors and assign the new type. Select the two interior doors to the Meeting Room and change their Type to 36" x 84".
 3. Switch to the View tab on the Ribbon and from the Schedules flyout, choose Schedule Quantities. In the New Schedule dialog, choose the Doors category and pick OK. In the Schedule Properties dialog, double click the following fields to add them to the Scheduled Fields window: Assembly Code, Comments, Cost, Family and Type, Finish, Fire Rating, Function, Level, Manufacturer, Mark, and Type Mark.
 4. Still in the Fields tab of the dialog, choose the Add Parameter button. Create a new instance parameter called Key Number which will be Text grouped under identity data. Pick OK to create the Schedule view with the default settings and the scheduled fields in alphabetical order. The Schedule view appears with a series of equal width columns, a Title and all of the field parameters showing as Headers for the columns. Note the five Edit buttons which appear in the Properties palette. With the schedule view current, we can now adjust the properties and see the results as we modify settings.

- Pick the Edit button for the Fields category in the Properties palette. You can re-order the scheduled fields by picking them and then using the Move Up and Move Down buttons. Unfortunately there is no “Apply” button in this dialog but you can pick OK to see the effects of changes and then pick Edit to open the dialog again and continue with modifications. Set the order of the scheduled fields as shown in the image below. Pick OK.



- Pick and drag along the divisions between columns in the Schedule view to resize the columns until you can read all of the text in the headers and data cells. Pick the Edit button by Filter. Set the Filter By to Level equal to First Floor and pick Ok. Open the Filter properties again set a second filter to Function equals Interior. Pick OK.
- Only two unique door types should now be displayed in the filtered schedule. Change the Type Mark for the 30" door to D2 and confirm that you wish to assign the change to all instances. Set the 36" Type Mark to D3.
- Pick one of the 30" doors by selecting any cell in a row. Choose the Highlight in Model button on the Ribbon to open a view where you are zoomed in on the selected door. Pick the Close button in the Show in views dialog. From the View tab, choose Tile windows.

9. It is possible to edit the schedule data associated with an object by editing the element directly or by editing the schedule data. With the 30" door still selected, set the Finish parameter in the Instance properties to Red Oak Stain and the Key Parameter to K100. Switch to the Schedule view window to confirm that the new information has been added to the schedule.
10. Pick in the blank cell for Fire Rating in any row with a 30" door. Type 1HR and then pick OK to assign the parameter to all instances with that type. Pick another 30" door and choose Highlight in Model. Pick Edit Type and in the Type properties dialog set the Cost to 225.00 and then pick OK. Pick in the Cost field in the Schedule beside one of the 36" interior doors and set the cost to 275.00. Confirm to continue.
11. Switch to the Schedule View and Edit the Filter settings again. If the edit buttons are not available, a data row is selected in the schedule. Pick a header or title cell and the edit buttons for the schedule view will appear. Set the Filter to none and pick Ok to display all doors in the project. If you have any additional door sizes which need a Type Mark and Cost assigned, complete those settings. I used a 32" door on the second floor and I assigned a Type Mark of D4 and a cost of 250. 00 for this type.
12. Pick the Edit button for the Sorting / Grouping parameter. Choose Sort by: Level and pick OK. Hmmm. No change. Pick Edit again and enable the "Blank Line" setting for the first filter. Also enable the Header setting and pick OK again. It would be nice to see some totals including the total number of doors per floor and also the total cost of the doors. Choose the Edit button again and enable the Footer selection with the default Title, Totals and Counts option. Also enable the Grand totals option. Pick Ok. Still no cost totals!
13. Pick the Edit button by Formatting and select the Cost field. Put a check mark by Calculate Totals. Set the Alignment to Right and pick OK.
14. Pick the Edit button by Sorting and Grouping again. Set a second sort filter by choosing Function in the Then By filter selection drop down. Pick OK. All of the exterior doors should now be grouped together. Open the Sort by settings again and enable a Footer with totals for the second filtering level. Pick OK and review the new schedule totals.

15. Pick the Edit button by Formatting. We can rename Headers by assigning a heading value for any field. Pick the Type Mark field and set the Heading to "Type". Pick the Family and Type field and set the Heading to Type Description. Set the Comments field to use a Heading called Remarks. Pick the Mark and Type Mark fields and set them both to a Vertical Orientation. Pick OK. The vertical text orientation will not show until the view is on a sheet.
16. In the Project Browser, create a new sheet with the C size titleblock. Set the name and number for the sheet to A9 – Schedules. Expand the Schedules / Quantities category in the Project Browser and then drag the Door Schedule view on to the sheet. The vertical text orientation is now visible. Pick the schedule and use the Control arrows to resize the columns until all data and header entries appear on a single line.
17. Pick the Door Schedule view in the project browser to display the Edit properties buttons which will allow us to finish the formatting for the Schedule. Pick the Edit button by Appearance. Clear all of the selected options and pick Ok. The schedule appears as a table of data with no dividing lines, no headers, and no title. Pick Edit again and turn on Grid Lines, Outline, Title and Header. Also enable the Blank row before data option and pick Ok.
18. Zoom in to one corner of the schedule where you can see a few headers and several rows of data. All of the text is the same appearance and only one lineweight is in use. Pick the schedule view in the browser and choose Edit Appearance again. Set the Outline to use Wide Lines. Enable the Underline options for the Title and Header sections and set both to use the Medium Lines option. The Grid Lines should already be defaulting to Thin lines. Set the Body Text to use the Stylus BT font, reduce the height to 3/32", and enable the Bold option. Set the header text to Bold as well but leave the font and text height. Pick Ok.
19. Let's create a couple of group headers now. Double-click the Door Schedule view in the Project browser to set it current. Pick and drag through the four headers at the left side of the schedule and choose Group. Pick in the blank header cell above the grouped headers and type Identity. Create a group header called Description for the next four headers to the right. Create one more group header called Vendor above the Manufacturer and Cost headers. Switch back to the A9 sheet view to see the updated schedule. Save and close the file.